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PREHISTORIC PORTO RICAN CERAMICS

By ADOLFO DE HOSTOS

IT is well known that Porto Rico, or rather *Borinquen*, to give its Indian name, was in the polished stone stage at the time of the discovery. Both history and archaeology have furnished ample evidence in support of this affirmation.

Like most peoples of the same degree of culture, the aborigines of Porto Rico knew and practised the art of pottery-making. They were agriculturists and fishermen, rather than hunters and warriors. They cooked some of their food, and they used vessels of baked clay for cooking, serving food, carrying water, and other utilitarian purposes. But there are good reasons for believing that ceramic objects had an important place also in the ceremonial and sacrificial paraphernalia used in the strange rites of their primitive religion.

In aboriginal life, every new art is based upon a certain necessity—admitting, by the way, that personal adornment is one of the human necessities. So the potter's art came to assist the native in the satisfaction of some of his bodily needs, until by a gradual and slow process, the suggestion of religious ideas found ready expression in the great plasticity of clay.

By a careful study of potsherds and other remains of the potter's industry which have been collected in Porto Rico, the writer has suspected, from the very beginning, that there is a certain relation between the quality of these specimens and the object or purpose for which they were intended. Many of the cruder and more grotesque sherds very often correspond to household and kitchen ware, while many of the finest specimens—exhibiting clear proofs of refinement in the art—were given to religious, decorative or, to us, unknown uses.

Leaving aside the accounts of Las Casas, Oviedo, Herrera and other historians of the discovery and colonization of the West Indies, the study of prehistoric ceramics from Porto Rico, as it

has been conducted by the author, in shell-heaps, kitchen-middens and other archaeological sites, has convinced him that the tribes which lived on or near the coast led a sedentary life, that they cooked some of their food, and, at least, that they were bread-eaters, cassava-bread eaters.

The principal fact, which indicates a continuous, uninterrupted aboriginal habitation of these sites during generations, is the relation

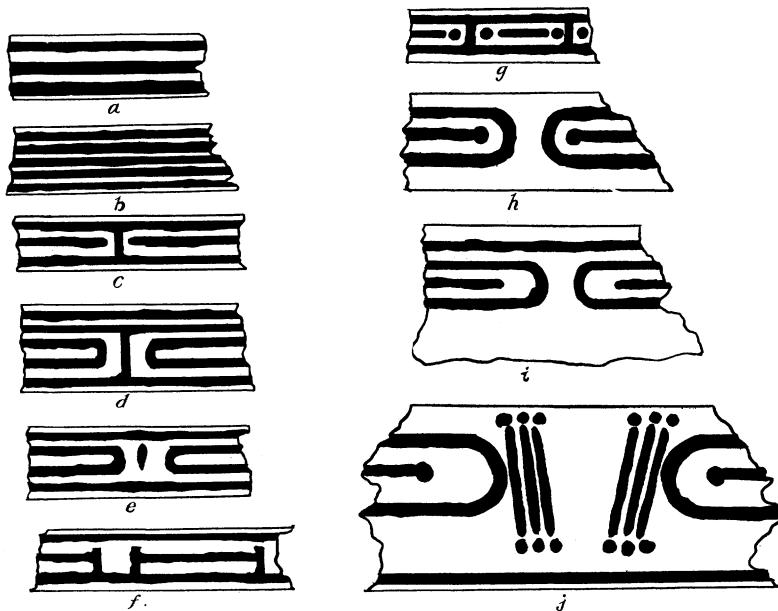


FIG. 41.—*a-i*, Elements of incised decoration on clay dishes, from the Joyua shell-heap, western coast of Porto Rico; *i*, is a specimen from Santo Domingo, W. I.

between depth and the development of the industrial arts, as shown in the quality of the relics found. The deeper the layer, the lower the quality. On or very near the surface, beautiful, painted, polished and sometimes lustrous ware shows the achievement of long, persistent effort. At the bottom, eight or ten feet below the surface, the rudest, most primitive specimens are found. As there seem to be no gaps between the successive layers—gaps which would show a discontinuance of progressive effort—the inference is made that such a place had been occupied continuously, that the

inhabitants were a sedentary, not a nomadic people. It is very doubtful if such an elaborate symbolic decoration in relief, as is usually found in the upper layers of shell-heaps, could have been the work of nomadic peoples, subject to frequent changes in environment, which would have interfered with the gradual progress in ceramic art.

To reach the second conclusion it is not necessary to travel far. It is enough to gather and view the vast amount of sherds which, judging by their shape, size, style and condition—soot and ashes still adhering to some of them—must have been used as cooking utensils. Often these fragments lie in the vicinity of layers of ashes and charcoal. The occurrence of *burens* or clay griddles, made of thick, coarse clay for baking their cassava bread, and still so employed by some West Indian peoples, will convince one that the aborigines had given a certain kind of bread an important place in their diet.

Pottery objects have been found: (a) in shell-heaps and kitchen-middens. These sites occur more frequently on the southern and western coasts, where, as it has been pointed out by Dr. J. W. Fewkes, quiet waters, good harbors, good fishing-grounds and extensive sand-beaches invite man to settle, affording greater accessibility and living facilities than on the northern coast. (b) In the floors of caves and between the crevices and shelves of large rocks. There are a great number of caves in Porto Rico, especially in the limestone region, in the northern half of the island. Overhanging cliffs on the northern coast have yielded abundant proof of aboriginal occupation. (c) In individual tombs and in cemeteries, near the *bateyes* or ballgame enclosures. These places occur, as a rule, in the mountainous interior, near rivers or running waters.

Almost invariably ceramic objects have been found broken. Not always even an imaginary reconstruction is possible. Several thousands of pottery fragments have been collected from hundreds of places, all over the island. This points to a large aboriginal population. Generally, the sherds found were the handles of bowls, water-jars, shallow dishes, and cooking ollas. As handles often assume the shape of solid, relatively heavy pieces moulded in the

figure of zoömorphic or anthropomorphic heads, attached to the rims or side of pots, they have endured the ravages of time and climate much better than the thinner, often undecorated sides. This will explain why the so-called "heads" are so common.

Very few whole specimens have been preserved. It is known that not more than twenty-five pieces have been collected since 1870, among other Indian antiquities of which there is a written record or description. Most of them have found their way to American or European museums. The list includes the specimens formerly in the collections of Dr. Coll y Toste, Mr. E. Newmann, Mr. V. Balbás, Father Nazario, and others figured and described by Dr. J. W. Fewkes in his *Aborigines of Porto Rico*. About 7 per cent. of all archaeological specimens of the pre-Columbian period, gathered in Porto Rico since 1870 and known to the writer by personal inspection or through written descriptions, are whole pottery objects—excepting clay stamps and beads. Most of them have been found by chance, very few being the fruits of systematic or scientific search.

The largest number of fragments have been turned up by the plow or spade while cultivating the fields and others have been discovered beneath or on the floors of caves. Probably a greater proportion of whole objects has been accidentally found in caves. A few were excavated from shell-heaps by anthropologists and amateurs. Much remains to be done in this respect. The scarcity of whole specimens may be due to a lack of thorough, scientific exploration and excavation and to the great humidity of the soil, coupled with the fact that the Arawak Indians interred their dead in small chambers dug in the ground, the walls of which, being held

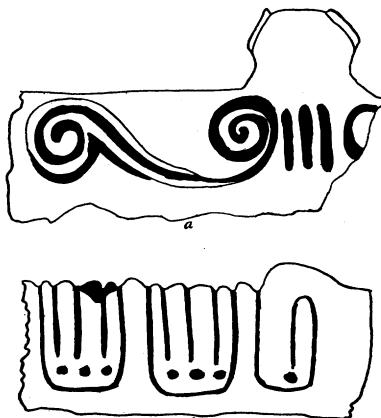


FIG. 42.—*a*, Double-s scroll (incised) on the side of an olla. Joyua shell-heap, Porto Rico. *b*, Indented rim and incised linear decoration on the side of a vessel, Porto Rico.

in place by a revetment of tree-branches and brush, soon crumbled and destroyed or exposed to decay the mortuary offerings placed beside the dead.

The prevalent type of the whole pieces of pottery preserved to this day is the globular or semi-globular *olla*, and the bowl and boat-shaped vessels. (Figs. 48 and 49, *f.*)

One of the very few water-jars is shown in figure 48, *a*. It may be described as a globulo-conical type—a globular vessel having its base modified into a conical extension—requiring for its use a wooden support or tripod. Although it is devoid of all decoration, it is a very interesting specimen, showing to a certain extent the method employed in its manufacture. The marked asymmetry of its outline suggests that a potter's wheel, or other revolving device, was not used in its making—nor in the manufacture of any other pre-Columbian ware from the West Indies. An examination of this jar permits archaeology to supply the information which history ignores in regard to the native methods of manufacture.



FIG. 43.—Handle and rim decorations on a shallow dish excavated at Joyua, Porto Rico.

Near the extreme of the base there are certain wrinkles or corrugations, about the width of the tip of the small finger, arranged, more or less, in spiral form. In the inside of the vessel, corresponding depressions and roughness of the surface

are plainly visible. It is evident that the shape of this vessel was given by coiling around a stone or wooden object a rope-like fillet of clay, which was afterwards smoothed down so as to cause the partial obliteration of the junction of the layers.

This jar, together with many other relics, was excavated from the Ostiones Point shell-heap, at Cabo Rojo, in the southwestern corner of the island, at a depth of two and a half feet. Its color and shape are exceptional among the remains of the place. Height, 12 inches, circumference at its widest part, 15 inches.

The commonest type of aboriginal pottery is the *olla*. (Fig. 48, *b.*)

These were probably used for boiling water, storing food for the living and the dead, and for other domestic uses. Probably the average size was 7 inches in diameter—a convenient size for cooking purposes. There are, however, several specimens of a very small olla, from 2 to $2\frac{1}{2}$ inches in diameter which, evidently, were not intended for the kitchen. (Fig. 48, c, d, fig. 48, i.)

In view of the great care with which these little vessels are made, and their unadaptability to many domestic uses, it is possible that in them was kept the *bixa* or vegetal substance with which the

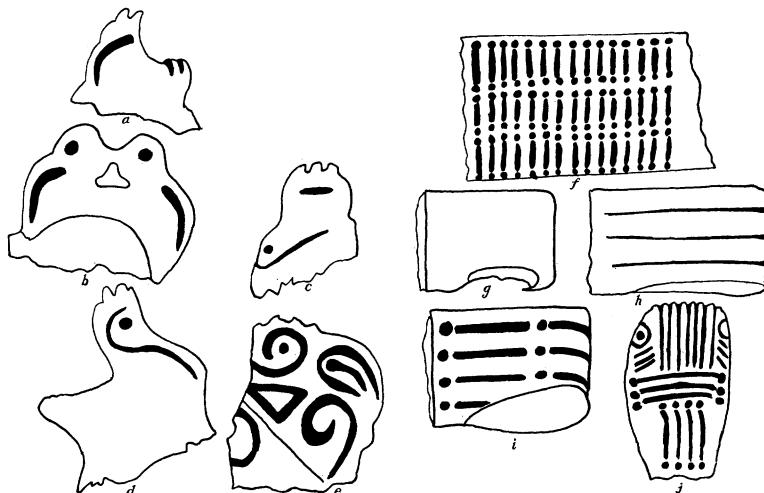


FIG. 44.—a-e, The evolution of an animal motive of ceramic decoration. The "Coco," a bird probably of the *Ibididae* group, as developed in the decoration of earthenware from Porto Rico. f-i, Dash-and-dot decoration on the handles of ollas, from Porto Rico. The theoretical evolution of this type of decoration may be followed by arranging these drawings in the following order: g, h, i, f. i, A handle from Santo Domingo, W. I.

Indians were in the habit of besmearing their bodies. Some of the beautifully handled "stamps" are well adapted in size and form for lids or covers for these ollas. The theory that the so-called stamps were used in connection with the painting of the face and body, gains strength when we consider certain morphological similarities with the small paint-jars in question. (See fig. 48, d.)

As will be seen with surprise, aboriginal vanity reserved for the

olla quite an unexpected function for this class of objects. Dr. Fewkes has related in his *Aborigines of Porto Rico* (page 109), the discovery of a little olla containing several hundred stone beads. Dr. Coll y Toste in his *Prehistoria de Puerto Rico* (page 37), has recorded the fact of a similar discovery at Utuado, by Mr. Legrand; Mr. Balbás of San Juan has related to the author the finding of a small earthenware vessel in which a necklace of pierced shells had been deposited. At the beginning of 1916, while visiting a sugar factory on the south side of the island, the present writer had the good fortune to hear from the lips of a peon, a vivid account of the unearthing of another jewel-jar which had preserved, at a very moderate depth, a beautiful string of 305 marble beads—amulet and all. His description of the vase corresponded somewhat with the printed accounts spoken of. Therefore, we are not proceeding with undue haste when we reasonably infer that certain vessels of the globular or semi-globular type, were used as jewel-boxes or reliquaries, to keep the coveted *colecibi* or stone-bead necklaces, the amulets, fetishes, ear-pendants and other jewels. Fig. 48, *h*, shows a remarkable jewel-pot. The motive of the relief decoration is a conventionalized snake figure. Each of the knob-like handles (one is missing) is the starting point of two graceful curves in relief, resembling somewhat the small letter *c*. These narrow bands are transversally cut up by shallow pits, giving to them the appearance of the annular body of a centipede. Incised lateral lines, also in the shape of the letter *c*, complete its decoration. (See fig. 47, *a, b.*)

It seems that the cooking ollas were made in a much plainer style. Fig. 48, *b*, shows one found in an Indian grave near Cabo Rojo, at Ostiones Point. The entire decoration consists of four equidistant relief bands of undulating design, about one inch long, placed near the rim. So much soot was still adhering to its sides that the hands were soiled in handling it. The contents—a shapeless mass of black earth—was analyzed in the hope of determining the kind of food placed as a mortuary offering, but, unfortunately, all traces of organic matter had completely disappeared.

Shallow Dishes.—Several specimens of broken shallow dishes

have been examined by the author in various small collections. However, not a single whole piece remains.

An excavation of Ostiones shell-heap yielded twenty of these fragments—at different depths down to four feet.

Most of them are one of the extremes or handles of circular or elliptical dishes. Many are decorated with the raised figures of "monkey heads"; other zoomorphic figures occur frequently—pelicans, owls, fishes and birds. (Fig. 49, *a*, *c*, *g*, fig. 49, *i*, *j*, *k*, *l*, *m*, *o*, *p*, *q*.)

An imaginary reconstruction of several fragments gives to the intact object a depth of 1 to $1\frac{1}{4}$ inch.

Figure 49, *c*, shows the best preserved shallow dish or clay spoon in the author's collection. The rims, raised above the bottom about $\frac{1}{2}$ inch, merge into a lateral handle in the shape of a fish tail. The modelling is good and the surfaces are very well polished and painted with a lustrous red.

Although a study of the stratigraphy of the Ostiones heap was not included in the author's program, an observant eye was kept for differences in type and technique in the sherds found. In general, it may be stated that painted ware occurred to a depth of $2\frac{1}{2}$ ft.—and of course, it was in this layer that the most delicate forms and the most ingenious patterns were found. It seems that pottery was painted after firing, as the pigment easily dissolved when cleansed with soapy water. Other layers contained, in their respective order: unpainted, but polished ware with relief decoration; coarse ware with incised decoration; undecorated specimens and lastly, finger-pressure-made ware of the coarsest kind.

Handles.—We surely do not pretend to know everything about Porto Rican ceramics—the really tell-tale and instructive specimens being so scanty—yet we have been able, notwithstanding, to determine, among other things, that usually the most elaborate decoration was bestowed upon the handles of dishes, bowls, jars, and

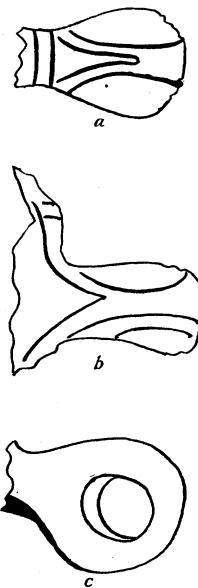


FIG. 45.—Knob-like pottery handles from Porto Rico.

vessels. Broken handles have been gathered by the hundreds. They are the commonest of pottery objects. Great ingenuity is often displayed in their making, the general character of the decoration being symbolic. (Fig. 49.) Judging by the material collected, the art had reached its climax when it attempted the reproduction of animal effigies by embodying in the whole object the complete form or outline of an animal—as was practised by several tribes of Central and South America.

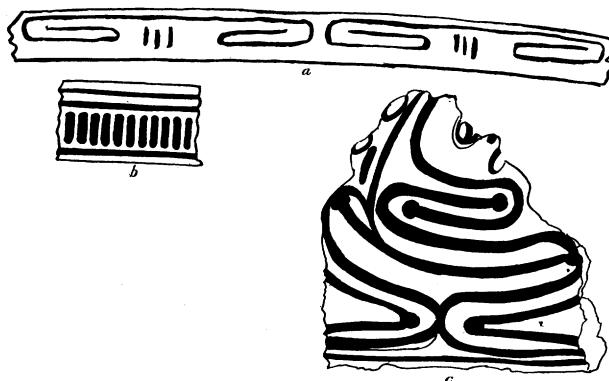


FIG. 46.—*a*, Incised decoration on the side of a large shallow dish, Porto Rico. *b*, Incised decoration on the rim of a small olla, Porto Rico. *c*, Elaborate curvilinear incised decoration on the sides of a clay vessel from Joyua shell-heap, Porto Rico.

The most remarkable effigy vase yet found in Porto Rico is shown in fig. 50, *a*, *b*. It represents a female kneeling figure, with a human-like face, arms, and hands resting against the body and the upper part of the abdomen. The mammae, sexual organ, the vertebral column, six ribs, and feet with only three toes, are well modelled according to the most curious and interesting native concepts of anatomy. The back part of the head is decorated with an imperfect quadrangle of rounded corners, enclosing two circles separated by a vertical line. All these lines are incised. The vertebral column and ribs are in raised lines. The vertebrae are represented by shallow pits. The thighs and knees are human; but the lower part of the legs and feet are abnormal, probably inspired by an animal model. The ears are quadrangular and have

two perforations. The whole object is hollow and water is admitted through a small aperture on the top of the head. Size: $7\frac{1}{2}$ inches high, $3\frac{1}{2}$ inches wide. It was accidentally found near the western coast of Porto Rico, in the vicinity of Aguada.

Suggestions of animal effigies, seen in fragmentary pottery, are however, common. Here the vessel preserving the primitive globular or ellipsoidal form, has the head, legs, wings or tails of animals, moulded or stamped in the rim or periphery.

That these symbols had a religious or esoteric meaning, probably expressing a desire to propitiate the occult zoömorphic or anthropomorphic spirits of their invisible world, is suggested by the very absence of floral or other designs to which it would have been more difficult to attach a religious significance. Their ability as modellers would have permitted them to find inspiration in plant life—here abounding in forms of great decorative value—in the celestial bodies and in some of the simpler scenes of their home life. Yet none have been depicted.

A classification of handles and other sherds as to the motives of decoration would group them into three classes: Those having human, anthropomorphic, animal, or mythological figures luted on; those devoid of decoration, where the function of a handle has been attained simply by folding a band or coil of clay in the shape of a loop, so as to permit the insertion of one or several fingers. (Figs. 44, g, 45, c.) In this class also fall the knob-like or spherical protuberances attached to the sides or rims of vessels. Some of these devices greatly resemble certain handles of modern porcelain ware.

The third general class or type comprises handles decorated with geometric designs. (Fig. 44, f, h, i, j.)

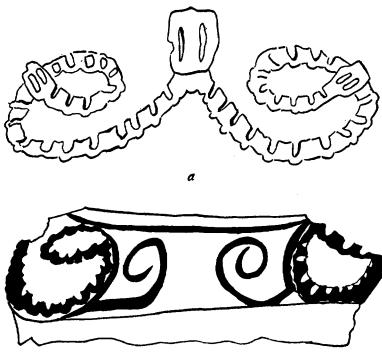


FIG. 47.—*a*, Diagram of snake form in relief applied to the sides of jewel jar of clay from Porto Rico. *b*, Diagram of lateral decoration on the jewel jar shown in *a*.

Animal figures represent pelicans, toads, snakes, owls, parrots, manatees, fishes, hutias (*Capromys*) and bats. Monkey heads are so numerous that it has been possible to detect certain differences in technique among them, admitting of their being grouped into the following sub-classes: those having all features cut in the same plane; those having a greatly exaggerated prognathism; and those so highly ornate and conventionalized as to have lost almost all semblance to the original model. (Fig. 49, *k*, *l*, *m*, *p*, *q*.)

Of the handles of the first type enough fragments occur in certain districts, representing a given animal as to show an influence of environment on decorative art at once evident and remarkable. The ibis (or *coco*)¹ group of ware from the Cabo Rojo region allows us to infer that that animal had an important place in the religious or economic life of those tribes. It may have totemic significance. The *coco* is now extinct in Porto Rico. It must have disappeared with the deforestation of the island (fig. 44, *a*, *b*, *c*, *d*, *e*).

But the question arises: Where did the native find a model for the monkey heads which predominate over all other animal forms? Monkeys were not known in Porto Rico.² They must have been familiar, however, to the continental Arawaks, whose descendants the Porto Rican Indians probably were, and to the Caribs, who were in the habit of assaulting by the sea the natives of Porto Rico. It is possible that continental influences persisted in the traditions of the Arawak race, and that they took form as a motive of pottery decoration in the shape of simian models. (Fig. 51, *a* to *h*.)

Dr. Stahl in his *Los Indios Borinqueños* attributes to the Caribs exclusively the manufacture of ceramic objects found in Porto Rico, believing that they lived along the southern coast—while the Arawak retired to the mountains of the interior. But this belief is totally disproved by the identity of civilization established by the constant similarity of archaeological remains from all sections of the country—sea-coast or mountain, river bank or cave floor. Monkey-headed handles, for instance, have been picked up

¹ The *coco* is probably a bird of the *Ibididae* group. It still lives in the coastal wilderness of the neighboring island—Santo Domingo, where it is known as *coco*.

² The fossil remains of monkeys have never been seen among the skeletal deposits of Porto Rican caves. At least, there is no written record of such discovery.

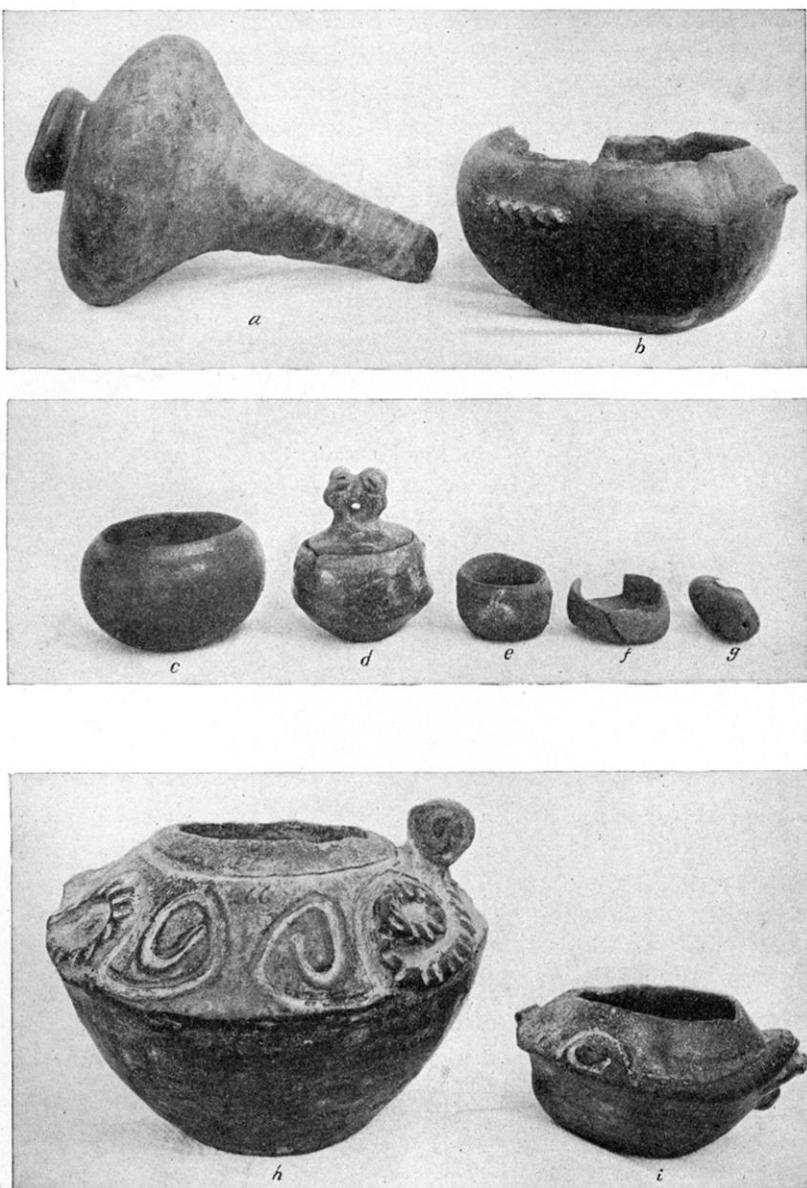


FIG. 48.—Pottery vessels; ollas, bowls, boat-shaped vessels.

near Barros, Utuado, Lares, Morovis, Corozal, and other central *Barrios* as well as in almost every township on the coast.

It should be noted that monkey heads are, much more frequently than in the case of other animal forms, surrounded by incised geometric or conventional decorative devices, sometimes greatly elaborated.

The more these little heads are studied the more one is inclined to believe that they are not representations of animals contemporary with their makers, but rather the plastic expression of the survival

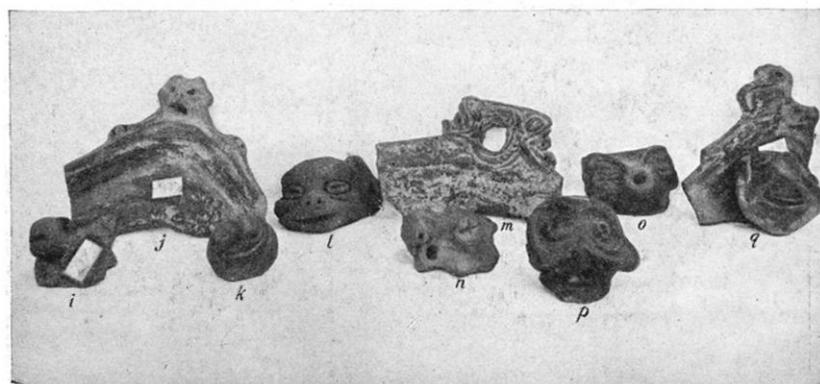


FIG. 49.—Portions of pottery vessels representing various animals.

of traditions pointing to a foreign origin of the race found by Columbus on the island. For convenience, therefore, we will call them mythological figures. The fact that there is an element of monstrosity about these rude carvings suggests the supernatural character of the beings depicted, or the tradition of natural beings viewed through the distorting prism of savage superstitious imagination.

That they are monstrous, strange and hideous, is not a proof of low artistic ability, but, on the contrary, it is a display of dexterity superior to a simple realistic representation of the subject.

As to size, the handles in the writer's collection vary from 3 inches to $1\frac{1}{8}$ inches.

Figure 44, *f*, well exemplifies one of the characteristic aboriginal West Indian designs which consists of a symmetrical arrangement of groups of parallel lines ending in or interrupted by shallow pits or dots. Concentric circles are also interrupted by radial dashes or lines. The same device is frequently applied when long parallel lines occur. Other familiar designs are circles, scrolls, crescentic lines, elliptical curves, triangles, rectilinear and curvilinear meanders, chevrons, and combinations of all these. Curvilinear designs, some of them very complicated, occur more frequently in clay than in stone and other hard substances—probably because of the greater facility afforded by clay for the production of complex figures. (Fig. 46, *c*.) A few examples of labyrinthine designs have been observed in pottery, especially among the so-called stamps. (Fig. 49, *b*.)

Human Heads.—Realistic representations of the human head are rare in Porto Rican ceramics. It is debatable whether it was beyond the artistic powers of the aborigines to model the human face *as it is*. But here again the author would call the attention to the fact that this very complexity of lines, this distortion of the human features by means of strange relief lines may be a proof of efficiency rather than deficiency in the art. One may suppose that what to us seems a distortion of the human face is simply the result of an effort to represent with relief lines, in clay, the tattooed designs on the Indian's face. Labrets, ear-pendants, head orna-

ments are also often shown. The rock and bone etchings of the palaeolithic age in Europe are far superior to the work of our aborigines as normal representations of men and animals. Yet everything else points to a cruder civilization, an inferior intellectual development in that remote age.

Our Indian human-like clay heads, with their greatly disproportionate nostrils, their enormous gaping mouths, and the face otherwise disfigured by concentric lines for eyes and eyebrows, their grotesque frontal bands, large, perforated ears and curious coronets or headdresses, are, unquestionably, exponents of a well-developed art—an art *sui generis*—too sure of its technique to attempt an impossible victory over the difficulties offered by the material worked.

Among the human heads in question there are some collected on the southern coast, near Guayanilla, which seem to differ entirely from the common type. The outline of the face is polygonal—figures of six, ten and twelve sides being the rule; two slits or shallow pits for eyes—sometimes slanting—a prominent nose—occasionally of Aztec type—and an elongated pit for a mouth complete this simple and uncommon type of decoration. The face is devoid of all conventional additions as in other types. (Fig. 49, *d, h*.)

There are also several other conventionalized variations of the best defined types which would be of difficult classification.

The characteristics of the several types we find modified and combined in an extraordinary variety.

Pottery Stamps.—Cylindrical and discoidal pottery stamps occur frequently in Porto Rican collections (fig. 51, *i-n*).

The suggestion that these objects were used to stamp pottery is subject to discussion.

Not long ago, the writer partially excavated a large shell-heap on the western coast of the island. Among the several hundreds of sherds obtained there were ten discoidal stamps. He has looked in vain, among a considerable number of potsherds and fragments of all descriptions, *taken from the same heap* which yielded the stamps, for a repetition of the patterns cut in them. A similar

search among many other clay objects gave the same negative result. Moreover, nearly all the native ware was more or less globular in shape and the plane surface of a stamp could not have been adapted to any objects having curved surfaces. He knows of



FIG. 50.—Effigy jar or canteen. *a*, front view, *b*, back view.

no ware from this region having large plane surfaces, except shallow dishes and the griddles used to bake *casabi*, and these are undecorated. It is not easy to admit that they were employed for that purpose until the copies of their patterns in contemporary earthenware are produced. It is very probable that they were in some way used in the execution of facial or body paintings. Such

an hypothesis will explain why some stamps are provided with beautiful and ingeniously carved handles—as if intended to satisfy the whims of personal vanity. Whether the Indians knew how to prepare some oily or resinous substance of the consistency necessary to retain the impression made by a burnt clay pattern, is not known, but is highly probable.

Mr. E. F. im Thurn in his work *Among the Indians of Guiana*, page 196, speaking of the painting of the Indians says:

Some women specially affect little figures like Chinese characters, which look as if some meaning were attached to them, but which the Indians are either unable or unwilling to explain.

Mr. Theodoor de Booy in his article: "Pottery from Certain Caves in Santo Domingo, West Indies,"¹ figures one clay stamp from the Salado caves (Santo Domingo), which, as will be seen, resemble certain characters "as if some meaning were attached to them." The similarity of customs of the Indians of Guiana and of Haiti and Porto Rico has been established on certain points.

Fray Iñigo Abad² says that,

the Indians painted their bodies with a variety of horrible figures, with oils, waters and certain *viscous* resins, extracted from trees.

Of the discoidal stamps there are two classes—with and without handles. Figure 48, *d*, shows a stamp provided with a handle cut in the shape of the heads of two birds addorsed. Sizes, from $2\frac{1}{2}$ to $3\frac{1}{2}$ inches in diameter.

Many of the specimens were so badly damaged that comparison with certain stamps from Santo Domingo was out of the question. One, however, had a well-modelled frog as a handle, like the Dominican specimens.

The cylindrical or roller stamps are rarer in Porto Rico than in other West Indian islands. I have seen but one specimen of this class in local collections. The same suggestion here made as to the use of the stamping disks applies to the rollers. In the author's collection there are some large pieces of large ollas or dishes deco-

¹ *American Anthropologist* (N.S.), vol. xvii, no. 1, 1915.

² *Historia Geográfica Civil y Natural de la Isla de San Juan Bautista de Puerto Rico*, p. 45.

rated on the rims by incised lines. Judging by the sizes of the objects and their plane surfaces, they would have been well adapted to receive the impression of roller-stamps—yet the patterns seen on them are of such nature that they could not have resulted from the application of a moving stamp rolled over their surfaces.

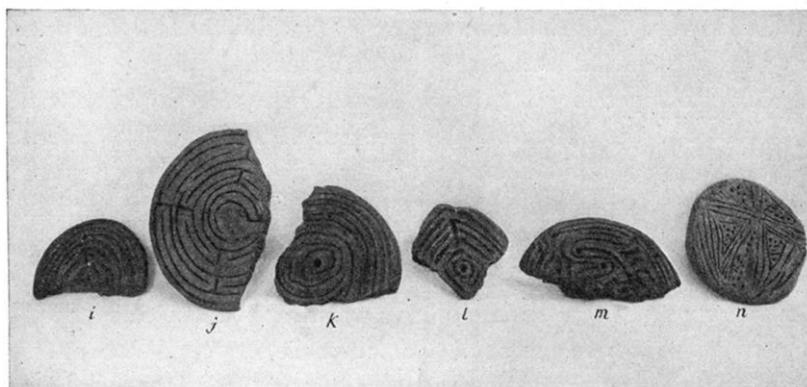
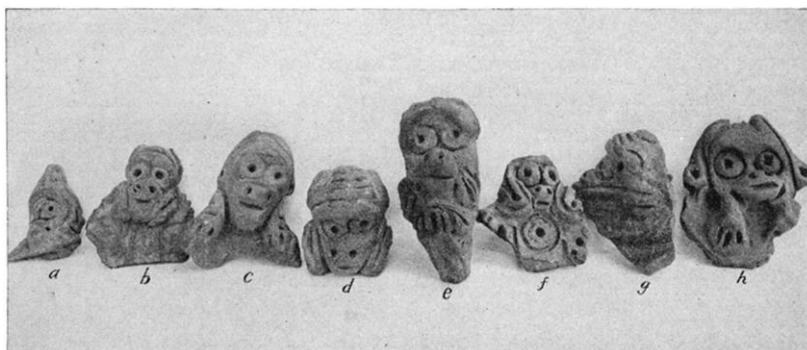


FIG. 51.—*a-h*, Pottery figures of simian aspect; *i-n*, pottery stamps.

Several other clay objects have been reported from the islands and islets which form the geographic, though not the ethnologic Porto Rican group: Porto Rico, Culebra, Vieques, Mona, Monito, Caja de Muerto and Desecheo. Idols, standing or kneeling, rattles ("maracas"), smoking pipes and discoidal graters, provided with sharply pointed shell or stone fragments as teeth. Cylindrical

clay beads, perforated for suspension, are mentioned by Las Casas as having been covered with thin plates of gold and worn as ornaments or pendants. Figure 48, *g*, shows one in the author's collection perforated both laterally and longitudinally. Though very well preserved, its golden jacket is missing. After diligent search, it has not been possible to locate a single gold-covered bead, nor indeed a single prehistoric gold object from Porto Rico. No mention is made of them in modern archaeological literature, except to note their absence. This may be due to a lack of thorough, systematic exploration; to the avarice of the Spanish conquerors and early settlers—who must have carried it away to be melted and coined; or to its wilful destruction by the Indians, thinking that they would thus stop the persecutions by the Spaniards, "whose god was gold."

We have given a brief description of aboriginal ceramics intended to convey a general idea of the better-known products of that industry. We shall now try to outline briefly how this was accomplished—what technical methods were employed.

On reaching this point, it will be pertinent to recall again the excavation of the Ostiones Point shell-heap. At a depth of $4\frac{1}{2}$ ft. a tiny pot was found not over $1\frac{1}{2}$ inches in diameter—the most primitive-looking specimen so far added to the writer's collection. Because it shows signs of having been fired, it will be recognized as an example of the second stage in the art of pottery making. During the first, a rude piece of clay was simply hollowed by hand and placed in the sun to dry. But our little specimen shows that it is made of coarse, unmixed clay, rudely kneaded into shape by finger pressure, the inside and outside surfaces having been left rough, uneven, unpolished, undecorated, and unpainted.

Just what the next step was, it is not possible to say with precision; but as evinced by other relics, smoothing and polishing of the exterior surface; the use of coils of clay neatly joined and smoothed down by means of stones, as in the object shown in fig. 48, *a*; the tempering of the clay with other hard materials, such as sand; crushed stone and shell—to increase its hardness; the

decoration, by simple incised lines at first, then by complicated linear devices, which by a gradual process developed into their curious relief technique; the uniform painting of the ware with a simple color—red, yellow or brown, were some of the successive accomplishments of the art in Porto Rico, which would have undoubtedly culminated in the invention of the potter's wheel if the aborigines had not been surprised by the Spanish Conquest.

CONCLUSIONS

It is greatly to be regretted that the archaeological material from Porto Rico lacks sufficient instructive specimens to allow a thorough analysis of our aboriginal ceramic industry. It would not be safe to make sweeping conclusions based solely on the scanty material collected. A study of the relations which existed between this and the other native industries, and an exact determination of the question of the aboriginal or imported origin of the art in Porto Rico would be premature.

If, as stated by Holmes,¹ a certain aspect of ceramic art reflects the degree of development of other coexisting industries, the most brilliant and illuminating reflections of lithic and textile art in contemporary clay have been either lost or remain yet buried in the ground. The artistic and constructional qualities of a great many of the clay artifacts collected in Porto Rico do not show evidences of a parallel growth with the superb stone, shell, wood, and bone carvings.

O. T. Mason² declared Porto Rican implements the most beautiful in the world. Speaking of three-pointed stones, he says:

Their elegance of design and variety of execution in conformity with an ideal, characterize these as the highest type of sculpture with stone implements in the world.

Truly, the "finds" made during the many years which have elapsed since these words were written, have amply justified the

¹ "Origin and Development of Form and Ornament in Ceramic Art," *Fourth Annual Report of the Bureau of American Ethnology*, p. 444.

² The Latimer Collection of Antiquities from Porto Rico, *Smithsonian Report (1876)*, p. 393.

enthusiastic statements made by Mr. Mason. Not only wonderful stone sculptures have been recovered—where the details of technique are as surprising as the conception of the idea involved—but a lesser number of bone and shell carvings have come to attest their mastery of the most difficult arts within the reach of primitive peoples. Without the use of iron or other metallic implements, the *Borinqueños* established in a remote past that perfect mastery over mechanical difficulties which enabled them to treat stone, shell, and bone as if they were plastic substances, twisting them, so to speak, into any desired shape; converting river-pebbles into strange idols of human form; piercing the hardest volcanic stones with incredibly fine and symmetrical perforations; carving out of solid granite artistic chairs of strange designs; cutting the wide lips of large conch-shells into beautiful implements of exquisite polish.

Yet, with two or three exceptions, their ceramic products do not exhibit the same refinements of technique and the same degree of artistic development.

It remains to be proved whether the race found by Columbus on the Island was autochthonous. Porto Rico will remain an archaeological riddle until the whole history of the development of lithic culture is amply exemplified by specimens collected on the island—until chipped or flaked stone implements come to light to connect the relative splendor of neolithic culture with the darkness of palaeolithic times.¹ No influence of climate, of racial characteristics, of natural environment, of ethnic idiosyncrasy, can account for the absence of the remains of an antecedent culture on this island. *Natura non facit saltum.* And whether this absence is merely accidental or whether chipped implements are buried in the unexplored layers of the subsoil is something that has not been established beyond doubt. Nevertheless the present writer will insist in calling it a riddle and he will indulge in the mental satisfaction of offering a solution to the problem by suggesting that the race of stone, bone, wood and shell, carvers, and potters, whose relics we have gathered was not the autochthonous people of Porto

¹ Flaked implements have already been found in Jamaica. See Duerden's *Aboriginal Indian Remains in Jamaica*, page 7.

Rico; but a branch of a race which migrated to it from an unknown part of the American continent and which counted, among its industrial and artistic accomplishments, stone sculpture, wood, bone, and shell carving and the art of making vessels of clay. Before that time, and until the necessary evidence is secured, we will have to admit that the island was uninhabited.

However, we must not be too radical when we are dealing with the shadows of a distant past. We must not forget that, as said before, at the bottom of shell-heaps, there has been found a certain type of earthenware which clearly is not only the most archaic but obviously the most primitive—as if it were the starting-point of a new achievement. It is possible that climatic conditions facilitated a rapid progress. To what extent climate may have been a favoring factor will be understood when we remember that it permitted a continuous outdoor-life during the whole year; that suggestions of forms were constantly kept by nature before the eyes of the incipient artist; that the mildness of the weather permitted him to experiment with great comfort and greater perseverance than the less fortunate inhabitant of cold climates; that the fertility of the soil and the abundance of small game and fish allowed him to lead a sedentary life—another condition which probably fostered the growth of the industrial arts. Time was ample, materials were plentiful, while certain peculiar conditions of light and color which obtain in the tropics, stimulated the imagination and the aesthetic sense. This probably will account for the absence of many intermediate forms which mark the painful and slow progress of the arts in other parts of the world—where life is precarious, the soil sterile, the climate hostile.

Supposing that pottery-making originated with the aboriginal race of Porto Rico, it would not be amiss to try to explain the rapidity of the evolution—in the artistical and technical sense, rather than in the chronological—by a supposition of foreign influence.

It is well known that communication between the islands of the West Indies and Central and South America was already habitual at the time of the arrival of the whites. The improvement

of the methods of manufacture—and even of their complete change—by effect of the contact with the natives of other lands, seems not only possible but highly probable.

However, the fact remains that the pottery objects and fragments from Porto Rico show a unity of construction and decoration pointing to a growth wholly spontaneous. It must be repeated—it is too early to draw conclusions. Exploration and excavation are better than disquisition.

It is to be hoped that an exhaustive archaeological survey of the West Indies will be undertaken in the near future so that it will be possible to establish, in a positive manner, the direction of prehistoric migratory currents on the American continent. As a result of this preliminary study of pre-Columbian ceramics, the writer has, at least, acquired what seems to be a true orientation in the effort of determining the relations of this art with the other industries and its meaning in the history of civilization.

The following plan of investigation is here suggested merely as a tentative outline embodying the new orientation in the treatment of the Antillean prehistoric problem:

1. Extensive excavation and study of the stratigraphy of Porto Rican shell-heaps;
2. Comparative study of the stratigraphy of coast and inland shell-heaps, including cave deposits;
3. Comparative study of the contents and stratigraphy of the shell-heaps of Porto Rico and the lesser Antilles as far as Trinidad and the immediate coast of Venezuela;
4. Extensive study of ceramic remains *in situ*, with a view to determining their coexistence with what are believed to be the products of an older culture, as typified by stone collars and three-pointed stones.

It is thought that such investigations would probably determine the origin of the aborigines of Porto Rico.

NOTES

Recently, fragments of a tripod vase, with simple cylindrical legs, have been found at Cerro de Las Mesas, near Mayaguez, P. R. This object shows no relation, however, with the well-known Costa Rican and Chiriquian tripods. It seems that they represent the first effort, on the part of the potter, to give stability to her bowl by means of three legs.

A pottery fragment with shell inlay—the only specimen from Porto Rico—has also been found.

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